

September, 1911.

Factory and Workshop Act, 1901.

Regulations for

The Smelting of Materials containing Lead,
The Manufacture of Red or Orange Lead, and
The Manufacture of Flaked Litharge.

The Secretary of State has made Regulations, the terms of which appear in the enclosed placard (Form 957), for the above processes. The Regulations apply automatically to all works in which the said processes are carried on. For convenience of reference the defined terms are printed in italics.

Part I specifies the duties of the occupier, and Part II those of the persons employed ; but with regard to the latter the Factory Act, 1901 (s. 85²) places concurrent responsibility upon the occupier to take all reasonable means, by publishing, and to the best of his power enforcing, the Regulations, to prevent contravention or non-compliance.

A copy of the Regulations must be kept affixed in a conspicuous place in the works, and the occupier is required (s. 86³, 1901) to give a copy to any person in his employment on application. For the latter purpose the smaller edition of the code in pamphlet form will be more convenient than the placard. In Wales and Monmouthshire a copy of the Regulations in Welsh must also be affixed. The Regulations must be noted in Part I of the General Register.

For the purposes of Regulations 13 and 17 it will be necessary for the occupier to make arrangements for regular monthly examination (on dates fixed in advance, and made known to the workers concerned) by the Surgeon ; that is, either by the Certifying Surgeon for the district, whose name and address appear on the Abstract, or by some other duly qualified medical practitioner appointed by the Chief Inspector. In general it is desirable that the Certifying Surgeon should undertake the duty, and he is required by departmental instructions to do so if called upon : apart from the Regulations he has to visit the works officially in connection with certificates of fitness, accidents, and cases of poisoning, and these duties rest with him even if another Surgeon be appointed for the purposes of the Regulations. In the absence of intimation to the contrary it will be assumed that the Certifying Surgeon will act as Surgeon under the Regulations, and in that case no formal appointment is necessary. It is, however, open to the occupier to apply to the Chief Inspector for appointment of another practitioner as Surgeon ; any such application should state the name, address, and qualifications of the practitioner proposed for appointment, and whether he is prepared to undertake the duties subject to the conditions which would necessarily be attached, namely :—

1. The duties are to be performed by the Surgeon personally, or in his absence by a duly qualified medical practitioner temporarily appointed by the Chief Inspector.*
2. In the first week of January in each year he will forward to the Superintending Inspector a return on Form 845† of the examinations and suspensions made during the previous year by him or by a practitioner temporarily appointed as above.
3. He will perform such duties, under the Workmen's Compensation Act, 1906, as are required from an Appointed Surgeon by that Act or by the instructions of the Secretary of State ; and in particular he will, if required to do so by the employer or by any workman concerned, make such examination and give such certificates as are required on the part of the Appointed Surgeon under s. 8 of that Act, with regard to cases of industrial disease.
4. The certificate of appointment will be revocable at any time by notice in writing signed by the Chief Inspector.
5. A copy of the certificate† of appointment is to be kept in the General Register unless and until revoked.

* Application for such temporary appointment is to be made to the Superintending Inspector, on Form 194, copies of which will be supplied.

† Copies will be supplied for the purpose.

Regulation 18 provides that a workman who has been suspended under any code of Regulations or Special Rules applicable to lead processes, shall not be employed in a lead process (as defined in this code) without certificate from the Surgeon. The codes in question are those for the manufacture of White Lead, Earthenware and China (or transfers for such ware), Electric Accumulators, Paints and Colours, and for Heading of Yarn (with use of lead), Vitreous Enamelling, and Tinning of Metals. If a workman previously employed in any of those industries is engaged, it should be ascertained whether he has been suspended, and the attention of the Surgeon should be called to any such previous employment.

The fees to the Surgeon, for duties arising under the Regulations, are payable to him by the occupier. Where the Surgeon is the Certifying Surgeon of the district, the scale is prescribed as follows, by Order of the Secretary of State, dated March 2nd, 1904 :—

For each visit, including such examinations, entries in Registers, issue of Certificates, and other duties as may be required by the Regulations—

- (a) When the examination is at a factory or workshop within a mile from the Certifying Surgeon's central point, 2s. 6d. for each visit, and 6d. for each person after the first five presented at that visit.
- (b) When the examination is at a factory or workshop more than a mile from the central point, the above fees with an additional 1s. for each mile or portion of a mile beyond the first mile.

Opportunity should be given the Surgeon to become acquainted with the processes. Signs of illness detected at the periodic examination may afford important indications of inadequate precautions or defective appliances.

Reg. 13^b requires that a Health Register shall be kept, in a form approved by the Chief Inspector. A copy of the approved Register (Form 605) is enclosed herewith. It is the duty of the occupier to enter therein the names of all persons employed in any lead process.

The Regulations aim at prevention of lead poisoning, which is contracted much more from inhalation of lead fumes and dust than in any other way. Although no appreciable fume containing lead comes off until pure lead is heated and stirred at a temperature of about 500° C., incidence of poisoning on persons engaged with molten lead (especially scrap lead) at temperatures below this is considerable, and the symptoms are often very severe. Such poisoning is probably due to the dust arising in the operations necessary for skimming the surface. Skimmings should never be deposited on the floor by the side of the bath but in a receptacle, and it is of the utmost importance that this receptacle should be placed inside a hood with exhaust draught.

The "efficient exhaust draught" required for the purpose of Reg. 3 is defined in such terms as to allow of the use of a heated flue or of propelling or exhaust fans, if sufficient to remove smoke generated at the point where the fumes or dust originate.*

Where heat alone is relied on to secure an efficient exhaust draught (Reg. 3)—

- (1) a hood should be applied leaving the smallest possible opening consistent with proper working ;
- (2) where the hood is not attached to the top of the furnace door, or not connected up by a duct with the main chimney stack or furnace flue, an air channel or duct at least 18 feet in height and of ample bore (in general not less than 24 inches in diameter), should be carried vertically upwards to the outer air ; and
- (3) the air channel or duct should terminate in such a way as to facilitate, whatever the direction of the wind, the free escape of heated air. A duct should end in a wind screen having the form of a large cone, so fixed that its lower edge is below the upper edge of the duct, and the annular free space between the cone and the duct rather greater than the capacity of the duct itself.

Frequently the diameter of a duct is too small, and mere increase in size will often convert an indifferent draught into a good one.

A heated flue alone would not be adequate for removal of dust created in feeding hoppers with, or in packing compounds of lead (Reg. 3).

* The smoke test may conveniently be made by means of special paper prepared by dipping blotting paper in a solution of nitre, and subsequently (after drying) in a solution of pitch in benzene. Such paper, when dry, smoulders and makes a thick smoke.

Regs. 9 and 13^c require use of respirators in certain processes. A simple and efficient form of respirator is a pad, about 3 inches by 4 inches, of ordinary non-absorbent cotton wool (absorbent cotton wool quickly becomes sodden) placed over the mouth and nostrils and kept in position by elastic bands passed round the ears. The pad should be burnt after use.

Reg. 11^a requires a suitable meal room, unless the works are closed during meal hours. The meal room should be well lighted, the floor space should be ample for each person likely to occupy it at any one time, and provision should be made for storage and warming of food. As regards the walls (of messrooms, cloak rooms, and lavatories), a smooth washable surface (*e.g.*, paint, tiles, or enamelled iron) for a height of 3 to 4 feet is desirable.

Regs. 11^b and 11^c require provision of suitable places for deposit of outdoor clothing and overalls respectively, which may be as near to the workplace as is desired, if the garments so deposited are not exposed to dust or fumes. For obvious reasons, the overalls must not be kept in the meal room, and the place for storing them (11^c) must be kept apart from that provided for storage of outdoor clothing (11^b). The same room (if apart from the meal room) may, however, suffice for both 11^b and 11^c, if numbered pegs on one side of a room or wide passage are reserved for clothing, and pegs on the other side, correspondingly numbered, for the overalls.

Under Reg. 12 the alternative of an enamelled iron trough with overhead jets of warm water will probably be found the most effective. An installation of this kind is accepted in lieu of a bath under Reg. 12^b. Stands for holding wash basins, if of wood, present usually a very uninviting appearance. Douche baths have several advantages over slipper baths, in cost of installation, economy in space, economy in water, and economy in time required for bathing.

It is most important that full advantage should be taken of the arrangements required by Regs. 8 to 12, and to ensure this someone should be made responsible for their cleanliness and proper maintenance.

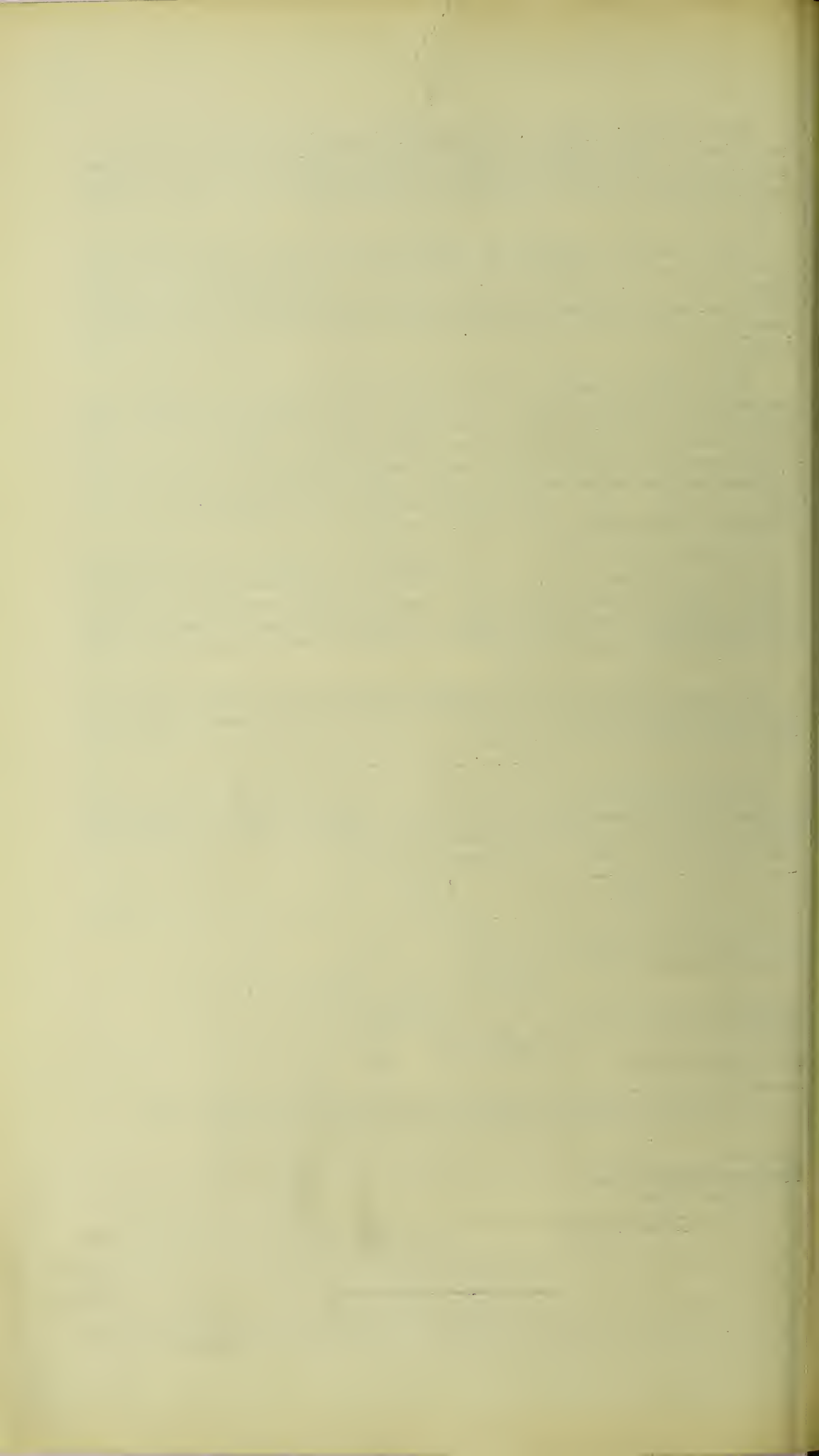
The following official forms and other prints connected with the Regulations may be obtained, directly or through any bookseller, from Wyman & Sons, Ltd., Fetter Lane, London, E.C. ; or Oliver & Boyd, Tweeddale Court, Edinburgh ; or E. Ponsonby, Ltd., 116, Grafton Street, Dublin ; or from the usual agents :—

Print.	Official No.	Price.	Postage.
Special Report by Dr. Collis, H.M. Medical Inspector of Factories, dated January, 1910.	Cd. 5152	d. 6	d. 1
Regulations for Lead Smelting, &c. { in pamphlet form.	Statutory Rules and Orders, 1911; No. 752.	1	$\frac{1}{2}$
{ in placard form.*	957	1	$\frac{1}{2}$
Health Register (Reg. 13 ^b)... 	605	3	1

* A Welsh edition is in preparation and will be supplied on application to H.M. Inspector for the District.

Factory Department,
Home Office.

September, 1911.



Form 1555.

September, 1911.

FACTORY AND WORKSHOP ACT, 1901.

Regulations for the Smelting of Materials containing Lead, the Manufacture of Red or Orange Lead, and the Manufacture of Flaked Litharge.

With further reference to the Home Office Circular of 14th February, 1911, the Chief Inspector of Factories begs to forward a copy of the Regulations as above, made by the Secretary of State on 12th August, 1911. A Memorandum explaining certain of the requirements, and other papers, are also enclosed.

The Regulations, based upon the Report of Dr. E. L. Collis, Medical Inspector of Factories,* were issued in draft in February, 1911. The objections received in pursuance of s. 80² were considered by the Secretary of State, and an amended draft was issued in May, 1911, to which no objections, other than those subsequently withdrawn, were made.

The Regulations apply automatically to all works in which the processes named above are carried on, and come into force on 1st October, 1911, except that so much of Regulations 2 and 3 as requires provision of efficient exhaust draught is deferred until May 1st, 1912. They supersede the existing Special Rules for Lead Smelting and for the Manufacture of Red and Orange Lead and Yellow Lead. The Special Rules for the Manufacture of White Lead are unaffected by the new code: both codes may be in force in the same works, each being limited, however, to the particular manufacture concerned.

The following are the principal points on which the Regulations differ from the draft of February, 1911:—

(1) Extension of time as regards the exhaust ventilation required by Regs. 2 and 3.

(2) Modification of the definition of "lead material" so as to exempt zinc ore, and material resulting from the treatment thereof, containing less than two per cent. of lead. Sulphide ores, therefore, it should be noted, are exempted only prior to calcination.

(3) A proviso has been added to Reg. 2 allowing lead material to be moved to a furnace by persons wearing suitable respirators when damping, exhaust ventilation, and enclosing, so as to prevent the escape of dust, are none of them practicable.

(4) Under Reg. 5 as modified, the use of a covered receptacle in removal of lead material from the exhaust draught is only required if vapour containing lead is given off.

Home Office.

September, 1911.

* Special Report on Dangerous or Injurious Processes in the Smelting of Materials containing Lead, and in the Manufacture of Red and Orange Lead and Flaked Litharge. London: Wyman & Sons, Ltd., 1910. [Cd. 5152.] Price 6d.; by post, 7d.

